

FACE INVESTIGATION

SUBJECT: FARMER DIES WHEN PINNED BETWEEN FRAME AND BUCKET OF A SKID STEER LOADER

SUMMARY

On August 28, 2003, a 41-year-old organic farmer (victim) was pinned between the bucket and the frame of a skid steer loader. (Figure 1.) He was working alone on the loader when the bucket came down and pinned him. His friend was at work and upon her return she was concerned when he did not answer his telephone. She went to his farm and found him. She called EMS.



Figure 1. Side View of Skid Steer Loader Involved in Incident

FACE investigators concluded that to help prevent similar occurrences, farmers and employers who operate skid steer loaders should:

- **Shut off the engine and lower the bucket before boarding, exiting or performing maintenance repairs.**
- **Inspect machines before use and ensure that they are operating properly. Equipment with any malfunction found during inspection should be taken out of service.**
- **Remain seated in the operator's compartment while operating the machine.**
- **Operate the loader with the seat belt fastened and restraint bars down in place.**
- **Work with another person when possible, while operating heavy equipment.**

INTRODUCTION

On August 28, 2003, a 41-year-old organic farmer (victim) was pinned between the frame and the bucket of a skid steer loader. (Figure 1.) Wisconsin FACE investigators learned about the incident via the death certificate. The certificate and subsequently the sheriff's report and the coroner's report were reviewed. An investigation was initiated. On March 3, 2004, the FACE Director and the Field Investigator conducted a visit with the victim's sister. She reviewed what she knew about the incident and offered suggestions about safety for a farmer working alone.

The victim grew up in a city environment and was described as outgoing and capable of repairing anything that was broken. He was the sole owner of his farm and had operated it for five years prior to the incident. Before attending school as an adult to learn horticulture and organic farming, he worked in a variety of jobs including restaurant work, working for a jeweler and managing a gas station. He grew cucumbers and tomatoes and was just beginning to add mushrooms to his inventory. He operated a John Deere tractor on his farm and borrowed a skid steer loader when he needed one.



Figure 2. Front View of Skid Steer Involved in Incident

The day of the incident, the victim borrowed the Owatonna 345 Mustang skid steer loader. (Figure 2.)

Steering Control

Loader Lift Arm Control Lever

Location where Victim was Found

The skid loader was equipped with ROPS; however, it is unknown if it had an interlock system that prevented the hydraulic bucket mechanism from being operated when the operator was not in the seat. It was also unknown what safety training the victim had regarding the skid steer.

INVESTIGATION

The victim used the skid steer loader periodically. It was determined that he had used the loader to haul sand from a pile near a pond a short distance away but it is unknown if he hauled sand the day of the incident. It was noted that the rear left side of the skid steer had a flat tire. (Figure 1.) His schedule the day of the incident is unknown, as is the exact time of his death. When his girlfriend left the farm between noon and 12:30 P.M., the victim was leaving the farm to get some gas for the skid steer. The victim had mentioned that it was giving him some trouble and was not running right. It is unknown if the victim elaborated about what might have been wrong with the skid steer. His girlfriend attempted calling him until she went to work at 2:30 P.M. and after work continued to try to contact him by telephone. Around 11:00 P.M. after she got back to the farm, she attempted to locate him and noticed the door on the pole building which was usually locked, was left open. She noticed that another person who was going to come and unload lumber that day had not unloaded it, so it was obvious that he had not come to the farm that afternoon. She then noticed the skid steer and the victim located outside of the pole barn. The victim was pinned between the frame of the loader and the bucket. He was found facing the front of the loader with the bucket down across his back and his feet on the ground. He was possibly working on repairing the skid steer. His friend noted

that the key in the ignition of the skid steer loader was turned off. She was unable to find a pulse and contacted EMS. When they arrived, the victim was apparently lifeless and they called the coroner.

CAUSE OF DEATH

The cause of death was determined to be traumatic asphyxiation and crushing chest trauma as a consequence of being pinned between the frame of the skid steer loader and the bucket.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Farmers and employers who operate skid steer loaders should always shut off the loader and lower the bucket before boarding, exiting or performing maintenance repairs.

Discussion: In this case, it is unknown what problem the victim was suspecting with the skid steer. However, when one is working on skid steer loaders with the buckets lowered, the bucket would not be able to fall. To prevent the operator from becoming pinned between the arm or frame and bucket, or under the bucket, the skid steer loader should be shut down and the bucket lowered to the ground before the operator enters or exits the machine. It is unclear if the victim operated the lever from outside the loader or if the hydraulics on the bucket failed. It is unknown if the skid steer was tested for potential problems following the incident.

Recommendation #2: Farmers and employers who operate skid steer loaders should inspect machines before use and ensure that they are operating properly before work begins. Equipment with any malfunction found during inspection should be taken out of service.

Discussion: When machines are found to be working improperly, they should be taken out of service immediately. In this case, the victim had mentioned that the skid steer was not working properly and he may have been trying to determine what was wrong with it or he may have been trying to repair it at the time of his death. The instructions in the operator's and service manuals should be studied because maintenance can be dangerous unless performed properly. If the machine belongs to someone else, the machine should be returned to the owner who has the operator's manual. With the instructions in the manual, the owner can repair that particular machine if indicated in the manual, or return it to the dealer for repairs. If one is working on the hydraulic system, he should place lift arm restraints (cylinder rod collars) as indicated in the manual or securely block the cylinders and equipment. In this case if the hydraulics on the bucket failed, restraints or blocks could have prevented the bucket from falling.

Recommendation #3: Farmers and employers who operate skid steer loaders should remain seated in the operator's compartment while operating the loader.

Discussion: Skid steer loaders are designed and manufactured to be operated from the operator's cab. Newer models of skid steer loaders have safety devices such as safety bars, seat belts, metal cage sides and rollover protection structures (ROPS) which are all intended to protect the operator from injury while seated in the cab. In this case, the

operator could have operated the hydraulic arm controls for the bucket from outside the cab.

Recommendation #4: Farmers and employers who operate skid steer loaders should operate the loader with the seat belt fastened and restraint bars down in place.

Discussion: Seat belts and interlocked restraint bars are intended to protect skid steer loader operators from serious injury caused by jolts, overturns and from being pinned by the equipment. Interlock devices prevent the bucket from being raised or lowered if the operator is not in the seat. It is unknown if this particular skid steer loader had an interlock system, but apparently the operator was able to operate the lever from outside the loader. The EMI skid-steer loader safety operator's manual recommends the following steps for preparation before beginning to work on a machine: Move the machine to a level surface; stop the engine; release all hydraulic pressure; engage or attach arm restraints or block up all hydraulically operated attachments or lower attachments to the ground and place the control in neutral.

Recommendation #5: Farmers and employers who operate skid steer loaders should work with another person when possible, while operating heavy equipment.

Discussion: The large proportion of occupational fatalities that are attributable to machines, such as the skid steer loader in this case, indicates the need for another person to be present when such machines are operated. A second person could help with those tasks that could be completed more safely with two people. Also, in many cases the immediate notification of emergency medical personnel could make a crucial difference. In this case the ignition key was noted to be turned off. However, the EMI skid-steer safety operator's manual recommends, "if adjustments must be made with the engine running, always work as a 2-person team with one person sitting in the operator's seat while the other works on the machine."